REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Interview of January 30, 2009

The applicant is appreciative of the opportunity to discuss the pending application with the examiners on January 30, 2009. During the interview, the subject matter of a proposed amendment to claim 1, claim 4, and U.S. patent 4,937,766 (*Deppe et al.*) and U.S. publication no. 2003/0219577 (*Tait et al.*) were discussed.

The examiners indicated that the proposed amendment to claim 1 raised new issues that require further search.

2. Election

The withdrawal of claims 3, 5-10, and 12 from further consideration is acknowledged.

The applicant respectfully requests that claims 7-9 be rejoined upon allowance of the application, since claims 7-9 have already been examined and indicated to be allowable in the Office action dated January 10, 2008.

The applicant also respectfully requests that claims 11 and 12 be rejoined upon allowance of the application, since claims 11 and 12 depend from generic claim 2, which is indicated to be allowable in the Office action dated January 10, 2008, and the Office action dated October 29, 2008.

3. In the claims

As shown in the foregoing LIST OF CURRENT CLAIMS, the claims have been amended to more clearly point out the subject matter for which protection is sought.

Claim 1 is amended to recite a laser marking means that performs marking with the three-dimensional coordinates as a laser beam focal point to transform a portion inside the workpiece. It is respectfully submitted that no new matter is added, since support for the amendments may be found, for example, at least in Figs. 6

through 8 of the pending application and at least on page 18, lines 12-13, 24-27, page 19, lines 1-7, and page 24, lines 12-13 of the accompanying description in the specification as originally filed.

Claims 2-12 are left unchanged.

Entry of the LIST OF CURRENT CLAIMS is respectfully requested in the next Office communication.

4. Rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 4,937,766 (*Deppe et al.*)

Reconsideration of this rejection is respectfully requested, in view of the amendments to claim 1, on the basis that the *Deppe* patent fails to disclose each and every recited element of amended claim 1.

By way of review, the embodiment of amended claim 1 requires a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area. An acquiring means acquires two–dimensional position information and density information of the dot.

As discussed in detail in the specification as originally filed (see at least page 4, lines 16-22, page 15, lines 20-22, and page 23, lines 9-23), the density information of a dot is the visually recognized darkness/lightness of the color of the dot, which is different from the three dimensional depth of the dot. The density of the dot can be adjusted by altering the depth of the dot (specification page 23, lines 20-23).

A coordinate setting means calculates, for each dot, according to the density information, dot depth information, as one of the three-dimensional coordinates, showing the distance from the surface of the workpiece to the dot in the thickness direction of the workpiece. The coordinate setting means further sets three-dimensional coordinates for each dot based on a position that is specified by the dot depth information and the two–dimensional position information acquired by the acquiring means. The laser marking means performs the marking using the three-

dimensional coordinates as a laser beam focal point to transform a portion inside the workpiece.

In contrast, the *Deppe* patent fails to disclose a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area, as required by amended claim 1. The *Deppe* patent also fails to disclose an acquiring means for acquiring density information of the dot and a coordinate setting means that calculates, for each dot according to the density information, dot depth information, all as required by amended claim 1.

The disclosure of the *Deppe* patent differs from the embodiment of amended claim 1 in a number of respects. The *Deppe* patent discloses a method and device for the acquisition of three-dimensional data representing the measurements or dimensions of a large scale object (col. 1, lines 5-7). This data acquisition is achieved by providing a characteristic point on the object with an external marker, which marking may be done through a laser beam projected onto the object (col. 2, lines 17-23). It is noted that it is apparent that any visually accessible point on the surface of the object can be used as reference point, thus one can cover the entire surface of the object (col. 2, lines 24-27).

From this discussion, it is clear that the system of the *Deppe* patent utilizes a device that merely maps the *exterior* of an object. This is in clear contrast with the embodiment of amended claim 1, which requires a laser marking device that irradiates a laser beam on a workpiece to transform a portion *inside* the workpiece at a focal point of the laser beam.

Since the device of the *Deppe* patent merely illuminates the exterior surface of the object, it follows that no transformation of a portion *inside* the workpiece occurs. Thus, while the camera sensors 1, 1' of the *Deppe* patent can detect the three-dimensional positioning of a spot on the exterior of an object, they cannot be considered to be a laser marking device that irradiates a laser beam on a workpiece to transform a portion *inside* the workpiece at a focal point of the laser beam, as is required by amended claim 1.

Additionally, there is no disclosure in the *Deppe* patent of acquiring density information of a dot, as is required by amended claim 1.

Since the camera sensors 1, 1' of the *Deppe* patent do not acquire density information of a dot, it further follows that, even if the *Deppe* patent discloses coordinate setting means, such coordinate setting means do not calculate for each dot, according to the density information, dot depth information, as required by amended claim 1.

Thus, for at least these reasons, the *Deppe* patent fails to disclose at least a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, and an acquiring means for acquiring density information of the dot and a coordinate setting means that calculates, for each dot according to the density information, dot depth information, all as required by amended claim 1.

Accordingly, since the *Deppe* patent fails to disclose every feature of amended claim 1, withdrawal of this rejection is respectfully requested.

5. Rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 4,937,766 (*Deppe et al.*) in view of U.S. publication no. 2003/0219577 (*Tait et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claim 1, from which claim 4 depends.

It is respectfully submitted that the *Tait* publication fails to provide for the shortcomings of the *Deppe* patent, discussed above with respect to claim 1, from which claim 4 depends.

In particular, the *Tait* publication fails to disclose a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, and an acquiring means for acquiring density information of the dot and a coordinate setting means that calculates, for each

dot according to the density information, dot depth information, all as required by amended claim 1.

While the *Tait* publication discloses a laser used to cut an optical film (paragraph [0030]), the laser does not transform an inside portion of a workpiece to create a dot, as required by amended claim 1, but instead vaporizes the film body along a cut line or otherwise is transmitted or reflected by the film (paragraph [0030]).

There is simply no discussion in the *Tait* publication of the use of a laser to transform a portion within a workpiece to create a dot marking.

Additionally, the *Tait* publication fails to discuss dot markings, and further fails to discuss acquiring density information of a dot and a coordinate setting means that calculates, for each dot according to the density information, dot depth information, all as required by amended claim 1.

Further, a skilled artisan would not have had any reason to combine the teachings of the *Deppe* patent and the *Tait* publication, since the *Deppe* patent is drawn to a device and method for the acquisition of three-dimensional data of large scale objects and the *Tait* publication is drawn to the creation and cutting of optical films without causing delamination. There is simply no nexus between the *Deppe* patent and the *Tait* publication that would have caused a skilled artisan to utilize the teachings of the *Deppe* patent and the *Tait* publication together. The *Deppe* patent and the *Tait* publication are not in the same field of endeavor, do not involve solutions to the same or similar problems, and are simply too divergent for a skilled artisan to have considered together.

Accordingly, since the combination of the *Deppe* patent and the *Tait* publication fails to disclose every element of amended claim 1, from which claim 4 depends, and since a skilled artisan would not have combined the teachings of the *Deppe* patent and the *Tait* publication, a *prima facie* case of obviousness cannot be established with respect to amended claim 1, and withdrawal of this rejection is respectfully requested.

6. Allowable subject matter

The applicant gratefully acknowledges the indicated allowability of claims 2 and 11.

With respect to the statement of reasons for allowance on pages 4 and 5 of the Office action, line 3 of paragraph 6 states that "an object to be marked" includes various elements of the indicated claims, including "a marking information setting means...". Since, in the claims, it is actually the laser marking device that includes the marking information setting means and the various other recited elements, it is believed that this statement is in error.

Accordingly, revision or clarification of the statement of reasons for allowance is respectfully requested in the next Office communication. The applicant respectfully requests that the examiner carefully review the language utilized in the reasons for allowance. A possible suitable revision may be "~~an object to be marked~~ a laser marking device that includes."

7. Information Disclosure Statement

An Information Disclosure Statement was filed on December 17, 2008. The applicant respectfully requests that acknowledgement and consideration of the submitted documents be provided in the next Office communication.

It is recognized that each of U.S. patent nos. 5,575,936 (*Goldfarb*) and 6,087,617 (*Troitski et al.*) disclose lasers used to transform portions inside a workpiece, as is recited in amended claim 1.

However, neither of the *Goldfarb* or *Troitski* patents disclose an acquiring means for acquiring density information of the dot and a coordinate setting means that calculates, for each dot according to the density information, dot depth information, all as required by amended claim 1.

In particular, the *Goldfarb* patent is silent with regard to density information of the dots formed at the focal point 14 of a laser beam 12 within a solid article 15.

Turning to the *Troitski* patent, image data of a 3D object can be provided to a CPU 12 (col. 4, lines 25-42). The X, Y, and Z coordinates can be computed by the position of the laser spot 48 as determined by a CCD array 46 (col. 4, lines 53-56). Within the computer graphics system a 3D object is defined by a plurality of points on its surfaces (col. 4, lines 65-67). Each point is represented by the X, Y, and Z coordinates, as well as a brightness bit that defines the brightness of each pixel in the manner of a binary or on/off manner where a light pixel may be represented by "1" and a dark pixel is represented by "0" (col. 5, lines 1-5, 24-30). It appears that the brightness bit is assigned to each point by the graphics program, and is independent from the X, Y, and Z coordinates. This configuration is in contrast to amended claim 1, in which density information of a dot is acquired by an acquiring means and in which a coordinate setting means *calculates*, for each dot *according to the density information*, dot depth information. In other words, the dot depth information is dependent upon the density information of the dot.

Since the X, Y, and Z coordinates are directly obtained or computed, independently of the brightness bit, the *Troitski* patent fails to disclose density information of a dot that is acquired by an acquiring means and a coordinate setting that means *calculates*, for each dot *according to the density information*, dot depth information, as is required by amended claim 1.

Accordingly, it is respectfully submitted that amended claim 1 is patentable in view of the teachings of the *Goldfarb* and *Troitski* patents.

8. Conclusion

As a result of the amendment to the claims, and further in view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

Please charge any additional fees required or credit any overpayments in connection with this paper to Deposit Account No. 02-0200.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicant's attorney, the examiner is invited to contact the undersigned at the numbers shown below.

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Respectfully submitted,

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